

Book Review

Principles of ecotoxicology. C. H. Walker, S. P. Hopkin, R. M. Sibly & D. B. Peakall, Taylor & Francis, London, 1996, xxii + 321 pp., price UK£19.95. ISBN 0-7484-0221-7

Ecotoxicology concerns the effects of chemicals, derived directly or indirectly as a result of human industry or agriculture, on natural ecosystems. The toxicological effects of a chemical on an individual organism are determined by the physical and chemical properties of the compound, the degree and nature of exposure, the biochemistry and physiology of the organism, and potential interactions with other anthropogenic compounds. Within the realms of ecotoxicology, the number of compounding factors increases. The physical and chemical nature of the media within which the compound is dispersed, chemical and biological degradation, biotransformation and accumulation, all affect the level of exposure. The resultant toxicological effects at the level of the individual organism have then to be considered in terms of effects on populations, communities and ultimately on ecosystems. To say that ecotoxicology is a multi-disciplinary subject is an understatement. This text attempts a comprehensive survey of all of these aspects. It succeeds admirably.

The text is divided into three parts and 15 chapters. The first part addresses the chemistry of pollutants, including metals, organic pollutants (industrial and pesticides), organometallic compounds and radionuclides, their movement into and through ecosystems, and their fate. Part two deals with biochemical and physiological effects of pollutants (including interactive effects between different pollutants) in individual organisms, and covers toxicity testing, biomarkers and biological monitoring in terrestrial, freshwater and

marine ecosystems. The final part examines how these effects at the level of the individual organism can affect population dynamics, communities and ecosystems. It also covers the evolution of resistance and the use of biomarkers in population studies. The book takes us through the whole subject in a logical sequence of well-defined comparatively short sections, which makes it easy to read, and easy to locate specific issues. It uses theoretical models to explore each aspect of ecotoxicology and illustrates these with specific case studies. Each chapter is followed by a short list of suggested further reading, which, helpfully, not only provides the reference but also a brief description of each reference. The book contains a glossary, an up-to-date reference list and a comprehensive index.

This inter-disciplinary subject is in comparative infancy. Its origins can be traced to concern aroused by Rachel Carson's *Silent Spring*, and, although the word was first coined in the late sixties, I notice in writing this review that Ecotoxicology is not in my word processor's spell checker. It is only very recently that ecotoxicology has begun to be taught as a course in its own right, and it is here that this book has its origins. Three of the four authors teach a course on ecotoxicology at MSc level at Reading, and the lack of a suitable single comprehensive text prompted them to produce this book. As befits this subject, the four authors came to ecotoxicology from different disciplines, but this is not apparent in the book—it provides a seamless comprehensive survey of the whole subject. The text was written for MSc students but warrants a wider readership.

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